



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/831,345	06/28/2001	Tomoko Ohtsuki	208418USPCT	6948

22850 7590 01/15/2003

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

KIM, PETER B

ART UNIT

PAPER NUMBER

2851

DATE MAILED: 01/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/831,345

Applicant(s)

OHTSUKI ET AL.

Examiner

Peter B. Kim

Art Unit

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 106-232 is/are pending in the application.
- 4a) Of the above claim(s) 185-209 and 211-232 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 161-178 and 210 is/are allowed.
- 6) ☒ Claim(s) 106-112, 119, 120, 122, 123, 127, 129, 131-134, 139, 142-146, 151-153, 158 and 179 is/are rejected.
- 7) ☒ Claim(s) 113-118, 121, 124-126, 128, 130, 135-138, 140, 141, 147-150, 154-157, 159, 160, 180-184 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provision ' application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5,6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

This application contains claims 185-209, and 211-232 drawn to an invention nonelected with traverse in Paper No. 9. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 106, 119, 120, and 123 are rejected under 35 U.S.C. 102(b) as being anticipated by Owa (5,838,709).

Owa discloses in Fig. 1, and 7, a light source unit comprising a light generating portion (211) which generates light with a single wavelength (col. 7, lines 45-54), a fiber group (12) made up of a plurality of optical fibers, and a light amount control unit which controls light amount emitted from the optical fiber group by individually turning on/off light output from each optical fiber where different optical fibers group is turned on and off at the different times (col. 20, line 52 – col. 21, line 60). Owa also discloses the wavelength conversion portion (14), which converts light within the range of infrared to visible region to ultraviolet light which is a harmonic wave of the laser beam (col. 5, lines 45-60). Owa also discloses an optical modulator

(65) which generates a pulse light having a predetermined frequency, and Owa discloses a delay portion which individually delays light output by setting some fiber output at a predetermined value and setting others at zero (Fig. 11-13).

Claims 151-153, 158 and 179 are rejected under 35 U.S.C. 102(e) as being anticipated by Hagiwara (US 2001/0048083).

Hagiwara discloses a light source unit comprising a laser light source (1) which oscillates a laser beam, a beam monitor mechanism (31) including a Fabry-Perot etalon (para 0048) which monitors the optical properties of laser beam to maintain a center wavelength at a predetermined wavelength (para 0030), and a first control unit which performs calibration based on temperature dependence of reference wavelength (para 0059, 0060). Hagiwara also discloses an absolute wavelength close to the set wavelength (para 0056-64). Hagiwara also discloses feedback control (para 0008).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 107 is rejected under 35 U.S.C. 103(a) as being unpatentable over Owa in view of Ohtsuki et al. (Ohtsuki) (WO99/46835).

Owa discloses the claimed invention as discussed above. Although Owa discloses the fibers arranged in an array, it does not disclose the fibers arranged in a bundle. Ohtsuki discloses

Art Unit: 2851

the plurality of fibers arranged in a bundle. Because both Owa and Ohtsuki disclose an ultraviolet laser apparatus which converts laser beam with wavelength in the infrared region to ultraviolet, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the fibers of Owa grouped in a bundle.

Claims 108-111 and 122 are rejected under 35 U.S.C. 103(a) as being unpatentable over Owa in view of Minden (6,400,871).

Owa discloses the claimed invention as discussed above. However, Owa does not disclose a fiber amplifier. Minden discloses a fiber amplifier that can perform optical amplification arranged on a part of each optical path of each optical fiber (106) which controls the amplitude, the peak power and the phase of the beams. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the amplifier of Minden to the invention of Owa to control the light amount by controlling the fiber amplifier because fiber amplifier of Minden improves Owa invention by providing the control of the light amount as well as the phase of the beams.

Claim 112 is rejected under 35 U.S.C. 103(a) as being unpatentable over Owa in view of Minden as applied to claim 108 above, and further in view of Ohtsuki et al. (Ohtsuki).

The further difference between the claimed invention and the modified Owa is the plurality of fiber amplifiers. Ohtsuki discloses plural fiber amplifiers for each fiber and controlling amplitude of the beam with the fiber amplifiers. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to further modify Owa by providing the plurality of fiber amplifier to the invention of Owa because both inventions deal with ultraviolet laser apparatus which converts laser beam with wavelength in the infrared region

to ultraviolet, and it would be design choice to control the light amount with the fiber amplifier arranged at the final stage.

Claims 127, 129, 131, 133, 134, 139, 142, and 144-146 are rejected under 35 U.S.C. 103(a) as being unpatentable over Owa in view of Minden.

Owa discloses the claimed invention as discussed above. However, Owa does not disclose controlling light amount with a fiber amplifier. Minden discloses a fiber amplifier that can perform optical amplification arranged on a part of each optical path of each optical fiber (106) which controls the amplitude, the peak power and the phase of the beams. Minden discloses the light amplifying portion arranged in plural and in parallel and the output of each light amplifying portion is an optical fiber. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the amplifier of Minden to the invention of Owa to control the light amount by controlling the fiber amplifier because fiber amplifier of Minden improves Owa invention by providing the control of the light amount as well as the phase of the beams.

Claims 132 and 143 are rejected under 35 U.S.C. 103(a) as being unpatentable over Owa in view of Minden as applied to claims 131 and 142 above, and further in view of Ohtsuki et al. (Ohtsuki).

The further difference between the claimed invention and the modified Owa is the fiber arranged in a bundle. Ohtsuki discloses the plurality of fibers arranged in a bundle. Because both Owa and Ohtsuki disclose an ultraviolet laser apparatus which converts laser beam with wavelength in the infrared region to ultraviolet, it would have been obvious to one of ordinary

Art Unit: 2851

skill in the art at the time of the invention to further modify Owa by providing the fibers of Owa grouped in a bundle.

Allowable Subject Matter

Claims 113-118, 121, 124-126, 128, 130, 135-138, 140, 141, 147-150, 154-157, 159, 160, and 180-184 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 161-178 and 210 are allowed.

None of the prior art of record teaches or discloses a light source unit with a light generating portion, a fiber group and a light amount control unit and a mode field diameter of fiber amplifier arranged most downstream, a memory unit which has an output intensity map, the wavelength conversion portion that generates one of an eight harmonic wave and a tenth harmonic wave of the single wavelength laser beam, and a beam monitor mechanism and a wavelength calibration unit.

None of the prior art of record teaches or discloses a light source unit comprising a laser light, a beam monitor, a first control unit, temperature dependence data including data on temperature dependence of center wavelength and the first control unit performing wavelength control of the laser light source together, the absolute wavelength provision source is an absorption cell on which said laser beam is incident, a fiber amplifier, and a polarization adjustment unit.

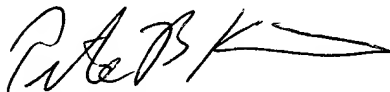
None of the prior art of record teaches or discloses a light source unit comprising a plurality of optical fibers, a polarization adjustment unit and a polarized direction conversion unit.

None of the prior art of record teaches or discloses a light source with a light amplifying unit including an optical waveguiding member made of phosphate glass and bismuth oxide glass doped with a rare-earth element.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Kim whose telephone number is (703) 305-0105. The examiner can normally be reached on Monday-Thursday from 6:30 AM to 4:00 PM. The examiner can also be reached on alternate Fridays during the same hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams, can be reached on (703) 308-2847. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'P. B. Kim', with a long horizontal stroke extending to the right.

Peter B. Kim
Patent Examiner
January 10, 2003